

## Chapter 10 • Circles

# Part 11 · The Escape Challenge

Five gates, each a calculation. Each gives you one digit. Collect all five to unlock the exit code.

## □ GATE 1 — The Contact Gate

How many common points does a tangent have with a circle?

**Digit:** □

## □ GATE 2 — The Angle Gate

What is  $\angle OPQ$  in degrees, where  $OP$  is a radius and  $PQ$  is the tangent at  $P$ ?

**Digit:** □

## □ GATE 3 — The Pythagoras Gate

Radius = 5 cm, distance to external point = 13 cm. Find the tangent length.

**Digit:** □

## □ GATE 4 — The Equal-Tangents Gate

From an external point, how many tangents can be drawn to a circle?

**Digit:** □

## □ GATE 5 — The Radius Gate

Tangent length = 24 cm, distance to centre = 25 cm. Find the radius.

**Digit:** □

**EXIT CODE:** □ □ □ □ □

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*One right angle — tangent meets radius at  $90^\circ$  — and one pair of equal segments — tangents from an external point — unlock every question in this chapter. Spot them, and the rest is Pythagoras and congruent triangles. ☺*